



Supplement of

Carbon storage in coastal reed ecosystems

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Supplementary Materials

Table S1. Site Descriptions

Site Numbers, Zones, and Replicates	Zone Parameters	Number of Replicate Sample Points and their Coordinates (WGS 1984)	Zone Size (km²)	Salinity (ppt)	Stem Counts (stems/m²)	Land Use Activities Nearby
1 Terrestrial	Presence of dry land, grass, trees, and/or rocks	3 (A, B, C) A: 60.0919°N, 23.5436°E B: 60.0919°N, 23.5436°E C: 60.0919°N, 23.5436°E	0.04	0.68	A: 39 B: 32 C: 46	Fresh water inflow from streams; agricultural and recreational activities (frisbee golf). Most inland/sheltered zone within a sheltered site.
1 Intermittent	Presence of saturated soils, lack of aquatic vegetation, and/or presence of algal species on top of rocks	3 (A, B, C) A: 60.0936°N, 23.5398°E B: 60.0936°N, 23.5398°E C: 60.0936°N, 23.5398°E	0.04	0.68	A: 129 B: 80 C: 65	Fresh water inflow from streams; recreational activities (frisbee golf). Sheltered site.
1 Littoral	Presence of standing water, aquatic vegetation, and/or open water	3 (A, B, C) A: 60.0883°N, 23.5410°E B: 60.0883°N, 23.5410°E C: 60.0883°N, 23.5410°E	0.85	0.68	A: 38 B: 15 C: 27	Fresh water inflow from streams; recreational activities (swimming, boating, frisbee golf). Most exposed zone within a sheltered site.

Site Numbers, Zones, and Replicates	Zone Parameters	Number of Replicate Sample Points and their Coordinates (WGS 1984)	Zone Size (km ²)	Salinity (ppt)	Stem Counts (stems/m ²)	Land Use Activities Nearby
2 Terrestrial	Presence of dry land, grass, trees, and/or rocks	3 (A, B, C) A: 60.0352°N, 23.5180°E B: 60.0352°N, 23.5180°E C: 60.0352°N, 23.5180°E	0.04	2.32	A: 27 B: 32 C: 29	Residential properties, farming, sheltered enclave
2 Intermittent	Presence of saturated soils, lack of aquatic vegetation, and/or presence of algal species on top of rocks	3 (A, B, C) A: 60.0351°N, 23.5240°E B: 60.0351°N, 23.5240°E C: 60.0351°N, 23.5240°E	0.02	2.32	A: 57 B: 71 C: 53	Residential properties, farming, sheltered enclave
2 Littoral	Presence of standing water, aquatic vegetation, and/or open water	3 (A, B, C) A: 60.0381°N, 23.5220°E B: 60.0381°N, 23.5220°E C: 60.0381°N, 23.5220°E	0.20	2.32	A: 11 B: 27 C: 20	Residential properties, sheltered enclave

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3 Terrestrial	Presence of dry land, grass, trees, and/or rocks	3 (A, B, C) A: 59.9844°N, 23.4451°E B: 59.9844°N, 23.4451°E C: 59.9844°N, 23.4451°E	0.08	2.64	A: 20 B: 32 C: 28	Semi-sheltered reeds around active boating pier and dog park of the town of Tammissaari
3 Intermittent	Presence of saturated soils, lack of aquatic vegetation, and/or presence of algal species on top of rocks	3 (A, B, C) A: 59.9845°N, 23.4454°E B: 59.9845°N, 23.4454°E C: 59.9845°N, 23.4454°E	0.10	2.64	A: 45 B: 46 C: 42	Semi-sheltered reeds around active boating pier and dog park of the town of Tammissaari
3 Littoral	Presence of standing water, aquatic vegetation, and/or open water	3 (A, B, C) A: 59.9855°N, 23.4442°E B: 59.9855°N, 23.4442°E C: 59.9855°N, 23.4442°E	0.45	2.64	A: 108 B: 75 C: 57	Semi-sheltered reeds around active boating pier and dog park of the town of Tammissaari

Site Numbers, Zones, and Replicates	Zone Parameters	Number of Replicate Sample Points and their Coordinates (WGS 1984)	Zone Size (km ²)	Salinity (ppt)	Stem Counts (stems/m ²)	Land Use Activities Nearby
4 Terrestrial	Presence of dry land, grass, trees, and/or rocks	3 (A, B, C) A: 59.9322°N, 23.3455°E B: 59.9322°N, 23.3455°E C: 59.9322°N, 23.3455°E	0.04	5.14	A: 29 B: 53 C: 40	Long and exposed reed bed along western shore of Pojo Bay.
4 Intermittent	Presence of saturated soils, lack of aquatic vegetation, and/or presence of algal species on top of rocks	3 (A, B, C) A: 59.9290°N, 23.3399°E B: 59.9290°N, 23.3399°E C: 59.9290°N, 23.3399°E	0.03	5.14	A: 25 B: 55 C: 49	Long and exposed reed bed along western shore of Pojo Bay. Nearby residential properties.
4 Littoral	Presence of standing water, aquatic vegetation, and/or open water	3 (A, B, C) A: 59.9296°N, 23.3409°E B: 59.9296°N, 23.3409°E C: 59.9296°N, 23.3409°E	0.10	5.14	A: 93 B: 82 C: 73	Long and exposed reed bed along western shore of Pojo Bay.

Site Numbers, Zones, and Replicates	Zone Parameters	Number of Replicate Sample Points and their Coordinates (WGS 1984)	Zone Size (km ²)	Salinity (ppt)	Stem Counts (stems/m ²)	Land Use Activities Nearby
5 Terrestrial	Presence of dry land, grass, trees, and/or rocks	3 (A, B, C) A: 59.8843°N, 23.2226°E B: 59.8843°N, 23.2226°E C: 59.8843°N, 23.2226°E	0.02	6.00	A: 13 B: 9 C: 10	Long and exposed reed bed along western shore of Pojo Bay. Next to shipping port.
5 Intermittent	Presence of saturated soils, lack of aquatic vegetation, and/or presence of algal species on top of rocks	3 (A, B, C) A: 59.8848°N, 23.2223°E B: 59.8848°N, 23.2223°E C: 59.8848°N, 23.2223°E	0.02	6.00	A: 59 B: 27 C: 41	Long and exposed reed bed along western shore of Pojo Bay. Next to shipping port.
5 Littoral	Presence of standing water, aquatic vegetation, and/or open water	3 (A, B, C) A: 59.8842°N, 23.2231°E B: 59.8842°N, 23.2231°E C: 59.8842°N, 23.2231°E	0.08	6.00	A: 217 B: 98 C: 81	Long and exposed reed bed along western shore of Pojo Bay. Next to shipping port.

Site Numbers, Zones, and Replicates	Zone Parameters	Number of Replicate Sample Points and their Coordinates (WGS 1984)	Zone Size (km ²)	Salinity (ppt)	Stem Counts (stems/m ²)	Land Use Activities Nearby
6 Terrestrial	Presence of dry land, grass, trees, and/or rocks	3 (A, B, C) A: 59.8456°N, 23.2442°E B: 59.8456°N, 23.2442°E C: 59.8456°N, 23.2442°E	0.01	6.15	A: 35 B: 69 C: 66	Sheltered reed bed where Pojo Bay opens into the Baltic Sea. Nearby residential properties, boating pier, and marine biology research station.
6 Intermittent	Presence of saturated soils, lack of aquatic vegetation, and/or presence of algal species on top of rocks	3 (A, B, C) A: 59.8464°N, 23.2487°E B: 59.8464°N, 23.2487°E C: 59.8464°N, 23.2487°E	0.003	6.15	A: 136 B: 125 C: 174	Sheltered reed bed where Pojo Bay opens into the Baltic Sea. Nearby residential properties, boating pier, and marine biology research station. Occasional goat grazing nearby.
6 Littoral	Presence of standing water, aquatic vegetation, and/or open water	3 (A, B, C) A: 59.8459°N, 23.2444°E B: 59.8459°N, 23.2444°E C: 59.8459°N, 23.2444°E	0.01	6.15	A: 52 B: 25 C: 40	Sheltered reed bed where Pojo Bay opens into the Baltic Sea. Nearby residential properties, boating pier, and marine biology research station.

Table S2. Soil Dry Bulk Density results per site and zone

Location	DBD Average	SE
Site 1 Avg	0.64	0.04
Site 2 Avg	0.86	0.05
Site 3 Avg	0.79	0.08
Site 4 Avg	1.04	0.08
Site 5 Avg	1.60	0.12
Site 6 Avg	0.88	0.08
Terrestrial Avg	1.11	0.06
Intermittent Avg	0.64	0.05
Littoral Avg	1.07	0.04

Table S3. Loss On Ignition results per site and zone

Location	%OM average	SE	Upper 10cm %OM Average	SE
Site 1 Avg	15.1	2.4	41.8	9.8
Site 2 Avg	7.8	1.6	17.1	5.5
Site 3 Avg	11.8	2.5	21.3	7.5
Site 4 Avg	13.4	3.3	50.4	8.2
Site 5 Avg	7.4	2.6	18.9	9.0
Site 6 Avg	14.8	3.0	33.6	9.2
Terrestrial Avg	9.2	1.5	32.1	5.8
Intermittent Avg	21.0	2.3	50.0	5.3
Littoral Avg	3.8	0.9	9.5	3.8
1Ter	9.7	3.3	55.8	7.3
1Int	26.1	4.5	65.5	0.7
1Lit	4.0	0.3	4.0	0.6
2Ter	3.9	2.3	13.1	8.9
2Int	12.5	2.8	35.1	2.9
2Lit	2.7	0.3	3.0	0.7
3Ter	14.1	4.5	24.8	14.9
3Int	13.6	4.1	23.3	15.9
3Lit	5.8	4.0	15.9	13.0
4Ter	8.8	3.8	45.4	12.2
4Int	23.8	8.0	74.2	0.5
4Lit	8.0	4.1	31.6	13.8
5Ter	1.2	0.2	1.5	0.4
5Int	23.4	7.4	54.4	5.3
5Lit	0.5	0.1	0.7	0.2
6Ter	14.7	3.7	51.7	2.7
6Int	40.7	8.9	47.4	15.4
6Lit	1.2	0.1	1.6	0.2

Table S4. Sediment C stock results per site and zone

Location	Average C_g_sq_m (0 cm to bottom of core)	SE	Average C_g_sq_m (0 cm to 10cm)	SE
Site 1 Avg	16195.3	2633.2	2949.3	492.4
Site 2 Avg	8435.6	1929.5	1935.3	389.8
Site 3 Avg	7279.9	1056.0	2458.4	515.3
Site 4 Avg	6299.2	957.3	2639.3	441.5
Site 5 Avg	5565.0	1054.0	1974.0	489.5
Site 6 Avg	7520.1	1932.2	1957.1	371.3
Terrestrial Avg	10438.1	1142.4	3196.6	308.9
Intermittent Avg	11256.9	1716.9	2707.8	228.7
Littoral Avg	3952.6	444.5	1052.4	143.5
1Ter	17480.7	642.9	4494.7	163.2
1Int	24408.3	1607.4	3129.0	257.8
1Lit	6697.0	738.7	1224.3	343.5
2Ter	4352.3	1061.6	2326.7	636.1
2Int	15948.3	892.1	2847.0	218.3
2Lit	5006.0	558.9	632.3	173.7
3Ter	9235.0	1488.9	3723.0	617.2
3Int	9040.3	647.3	2376.3	1126.7
3Lit	3564.3	618.2	1276.0	182.3
4Ter	8759.0	1807.4	3089.3	928.3
4Int	6475.3	631.3	3125.3	693.8
4Lit	3663.3	903.5	1703.3	581.8
5Ter	8064.7	423.2	2433.3	1226.4
5Int	7063.7	861.9	2710.3	435.5
5Lit	1566.7	409.2	778.3	301.0
6Ter	14737.0	1360.2	3112.3	171.7
6Int	4605.3	1761.9	2058.7	402.3
6Lit	3218.0	548.4	700.3	21.7

Table S5. Aboveground biomass C stock results per site and zone

Location	Aboveground C_g_sq_m	SE
Site 1 Avg	80.4	26.4
Site 2 Avg	75.3	18.5
Site 3 Avg	90.5	16.7
Site 4 Avg	73.4	16.9
Site 5 Avg	83.0	33.2
Site 6 Avg	150.5	32.3
Terrestrial Avg	70.0	12.9
Intermittent Avg	122.3	19.7
Littoral Avg	84.2	19.2
1Ter	33.7	5.1
1Int	180.5	26.3
1Lit	27.1	9.9
2Ter	38.1	4.6
2Int	148.3	8.1
2Lit	39.5	6.1
3Ter	56.6	15.7
3Int	77.4	13.1
3Lit	137.5	33.9
4Ter	99.7	22.6
4Int	24.6	3.3
4Lit	96.0	33.6
5Ter	36.7	12.0
5Int	58.6	4.7
5Lit	153.7	95.8
6Ter	155.0	41.1
6Int	244.9	37.2
6Lit	51.7	9.9

Table S6. Belowground biomass C stock results per site and zone

Location	Belowground C_g_sq_m	SE
Site 1 Avg	3439.1	992.9
Site 2 Avg	3712.3	601.1
Site 3 Avg	1936.7	898.1
Site 4 Avg	1705.1	572.7
Site 5 Avg	1984.7	872.4
Site 6 Avg	1938.1	659.4
Terrestrial Avg	1879.0	410.0
Intermittent Avg	4499.5	484.6
Littoral Avg	188.5	31.1
1Ter	3154.7	521.0
1Int	6883.6	769.2
1Lit	279.0	8.5
2Ter	2289.4	NA
2Int	4186.6	522.4
2Lit	NA	NA
3Ter	162.4	44.6
3Int	5511.8	297.6
3Lit	135.8	35.9
4Ter	1717.3	655.3
4Int	3056.8	1287.9
4Lit	341.3	62.7
5Ter	421.5	104.6
5Int	5457.6	210.9
5Lit	75.0	37.6
6Ter	3802.5	878.4
6Int	1900.4	1018.7
6Lit	111.4	23.8

Figure S1: Example of the 1m grid overlay used to randomly select sampling starting points.

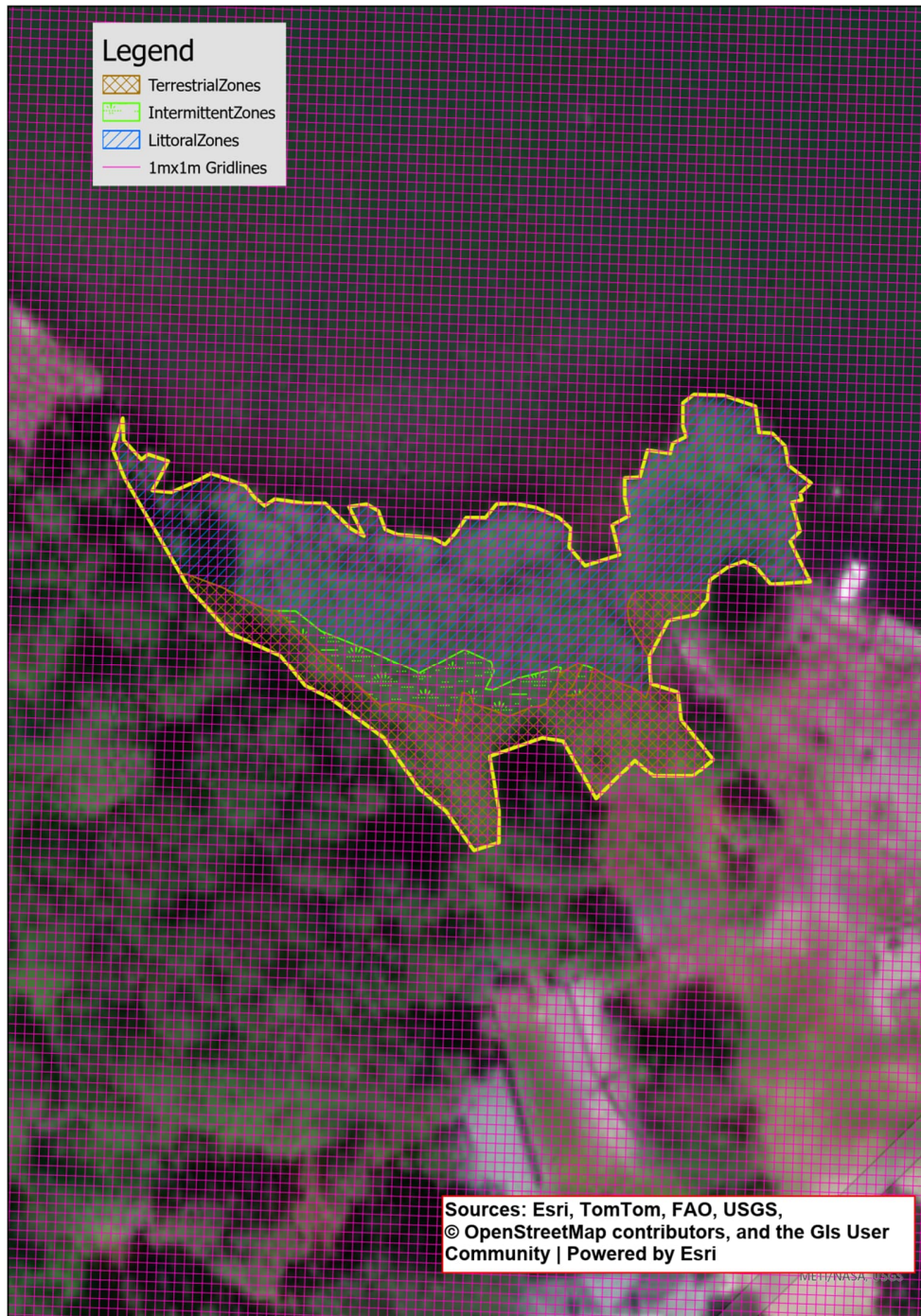


Figure S2: Visualization of the regression used to generate the LOI conversion factor

Relationship between LOI and TOC

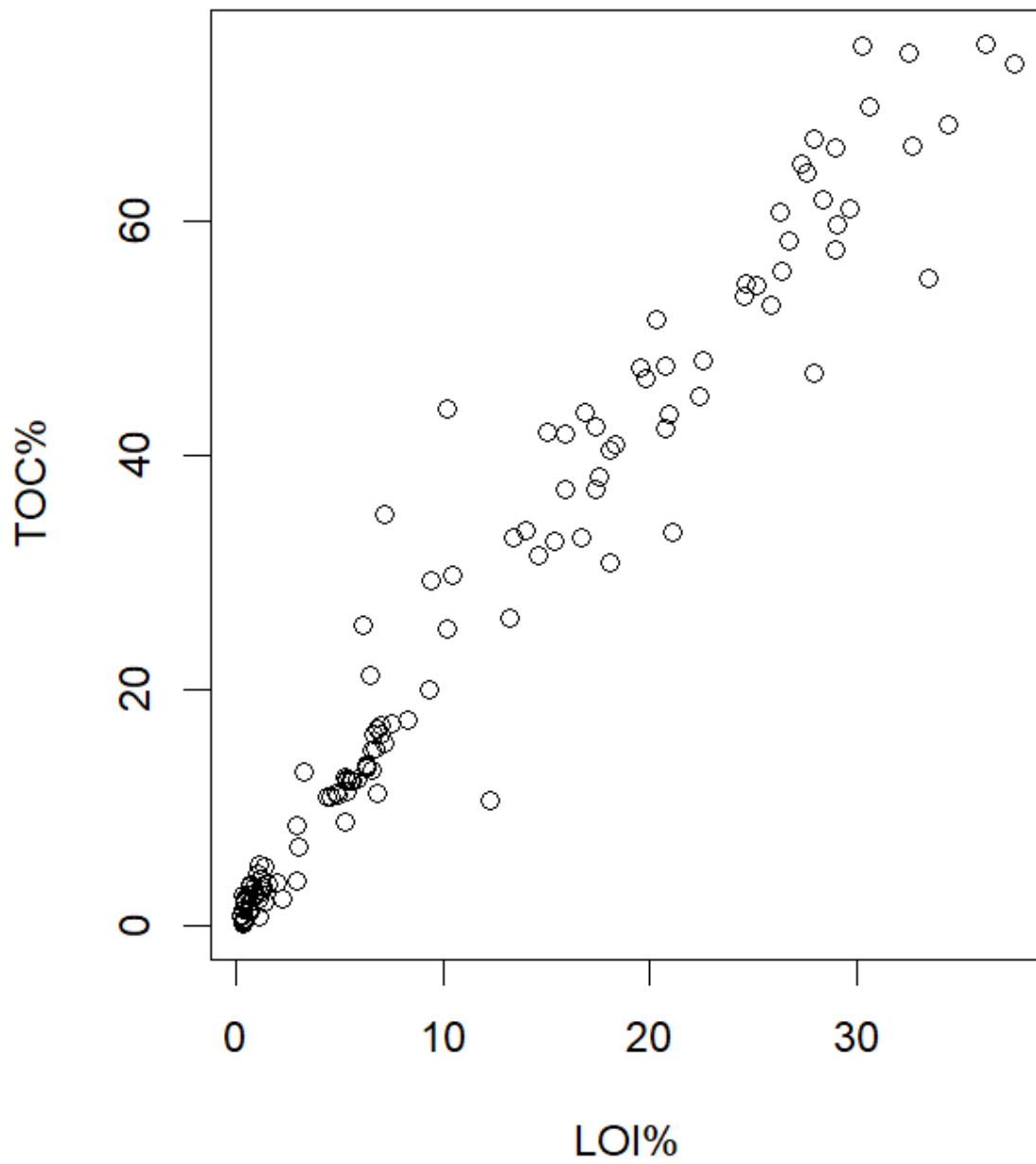


Figure S3: Stem counts per square meter across all reed bed zones and sites.

